

Amend Claim 54 as follows:

*sub C2* 54. (amended) An improved prosthetic knee joint, comprising:

a tibial platform for replacing tibial portions of a knee, a tibial platform provided with two outwardly curved tracks on its superior surface;

*B2* a pair of intermediate tibial bearing components, each component provided with an inferior bearing surface for being slidably received in one of the outwardly curved tracks, and each component provided with a generally concave bearing surface on its superior surface providing an articulated joint with femoral condylar surfaces; and

during knee joint articulation: (i) the pair of tibial bearing components simultaneously [sliding] slide anteriorly-posteriorly in the outwardly curved tracks to provide unconstrained anterior-posterior shift, (ii) one of the tibial bearing components [sliding] slides anteriorly in one of the [outwardly] curved tracks while the other of the tibial components is [sliding] slides posteriorly in the other of the [curved] tracks to provide unconstrained axial rotation, and (iii) the tracks [providing] provide enhanced medial-lateral stability.

REMARKS

Reconsideration and allowance of this application under 37 CFR §1.116 are respectfully solicited.

For convenience of reference, response will be made on a paragraph-by-paragraph basis to the Examiner's action mailed April 21, 1981 as follows:

Par. 1: The specification has been amended on pages 15 and 35 as required by the Examiner. On page 17, lines 7 and 8, the expression "and as illustrated in FIG. 23" has been deleted to correct the inaccuracy caused inadvertently by reference to FIG. 23. As will be noted at page 6, lines 11-27, and as shown in FIG. 23, reference is made to the general case where the pairs of major generating radii D1 and D2 may be either equal or unequal and, of course, at page 17, line 7 et seq., the case of the present embodiment is described wherein, as stated, the pairs of major generating radii D1 and D2 are equal.

Par. 2: The renumbering of the claims is noted and the claims will be treated accordingly.

Pars. 3, 4 and 5: Claims 41, 30 and 39 have been amended to overcome the Examiner's respective objections.

Par. 6: Claim 48 has been amended to recite that the first and second bones experience relative axial motion and the definite article "the" has been replaced by the indefinite article "a" preceding the expression "second predetermined direction." Accordingly, it is submitted that Claim 48 as amended satisfies the requirements of 35 USC §112.

Par. 7: Claim 53 is a Jepson type claim with the preamble reciting the prior art structure found in U.S. Patent No. 4,085,466 to Goodfellow et al.; specifically, the expression "circular bearing insert means" in the claim preamble refers to the meniscal component 30 of Goodfellow et al. Applicant's novel structure supporting the improvement recitation of Claim 53, which improvement is defined broadly in this claim, is Applicants' curved tracks 143 and 148 of the tibial platform component 116

shown in FIG. 16 and the projecting dove-tailed surfaces 144 formed on the inferior side of the intermediate tibial bearing components 117 shown in FIG. 19. The functional advantages recited in the claim for Applicants' generally defined improved structure are set forth in detail in the specification at page 31, line 24 et seq. Accordingly, it is respectfully submitted that Claim 53 satisfies the requirements of 35 USC 112.

Par. 8: Claims 54, 55 and 58 were rejected under 35 USC 112 as being indefinite in using the term "outwardly curved track(s)" and Applicants respectfully traverse this rejection and note that in the bi-compartmental embodiment disclosed in FIG. 16, and referred to in the specification at page 29, lines 9-10, curved tracks 148 and 153 are disclosed which, as shown, are "outwardly curved"; and the uni-compartmental embodiment shown in FIG. 40B has a single "outwardly curved" track as shown. Hence, it is respectfully submitted that such claims taken in the context of the specification and the figures include recitations which are clear, understandable, and thereby satisfy the requirements of 35 USC 112.

Par. 9: Independent Claim 56 is a Jepson type claim with the preamble reciting the structure of U.S. Patent No. 4,085,466 to Goodfellow et al. wherein the meniscal component 30, during joint articulation:

- (i) may only rotate,
- (ii) may only experience anterior-posterior shift,
- or
- (iii) may experience both axial rotation and  
anterior-posterior shift.

The claim in using the term "and/or" is clearly describing such three possibilities during joint articulation and it is respectfully submitted that such term is clear and satisfies 35 USC 112.

Par. 10: Applicants respectfully submit that the "projection" is not recited as being part of the means provided on the bearing surface; to the contrary, Claim 57 is silent as to whether the means for providing the bearing insert means with improved medial-lateral stability is provided on either the bearing insert means or the tibial platform means or on both. Accordingly, it is submitted that Claim 57, dependent on Claim 56, satisfies 35 USC 112 in that the structure recited in Claim 57 merely further defines the structure recited generally in independent Claim 56.

Par. 11: Claim 48 has been amended to recite, "fourth means for constraining motion of said third means during joint articulation to a predetermined path relative to said second means to provide stability in a second predetermined direction." Such structure is neither taught nor suggested in Murray et al., to the contrary, since the opening 84 extending through the meniscal plate 30 is oversized with a respect to the diameter of the cylindrical post 72, it is clear that such cylindrical post does not "constrain" motion of the Murray et al. meniscal plate 30 to a predetermined path relative to the tibial implant 28 to provide stability. Hence, it is submitted that Claim 48, as amended, defines non-obvious subject matter under 35 USC 103 over Murray et al.

Par. 12: Claim 53 has been amended to recite that Applicants' improved means is for preventing rotation of the bearing insert means relative to the tibial platform means independent of "translational" sliding movement of the bearing

insert means relative to the tibial platform means to provide Applicants' novel and unexpected result. In Applicants' specific embodiment to which broad claim 53 is directed, the projection and track prevent rotation of the bearing insert means independent of translational sliding movement to produce Applicants' unexpected, novel result recited in Claim 53. To the contrary, the meniscal plate 30 of Murray et al. can rotate independent of translational sliding movement and the mensical plate 30 can experience translational sliding movement without rotation. Hence, Applicants' claimed structure is not present in Murray et al. and it is not obvious to one of ordinary skill in the art how the structure of Murray et al. would be modified to produce Applicants' claimed structure and unexpected result. Accordingly, it is submitted that Claim 53, as amended, defines non-obvious subject matter under 35 USC 103 over Murray et al.

Par. 13: Applicants submit that the tibial plateau surfaces 58 of Murray et al. do not constitute curved tracks and do not provide the structural recitations set forth in Claim 54, 55 and 58 and do not provide the functional equivalent of such claims. Specifically with regard to Claim 54, this claim recites that the pair of tibial bearing components simultaneously slide anteriorly-posteriorly in the outwardly curved tracks to provide unconstrained anterior-posterior shift whereas the meniscal plate 30 of Murray et al. does not provide unconstrained anterior-posterior shift; to the contrary, anterior-posterior shift of the meniscal plate 30 is restrained by the cylindrical post 72. Further, Claim 54 recites that one of the tibial bearing components slides anteriorly in one of the outwardly curved tracks while the other of the tibial components slides posteriorly in the other of the curved tracks to provide

unconstrained axial rotation, whereas the meniscal plate 30 of Murray et al. is a single or unitary device and Murray et al. in no manner discloses a pair of tibial bearing components for providing unconstrained axial rotation as defined in Claim 54. Still further, Claim 54 recites that the tracks provide enhanced medial-lateral stability, whereas if the plateau surface 58 of Murray et al. were to be considered to be two curved tracks, such tibial plateau surface 58 in no manner provides any enhanced medial-lateral stability; to the contrary, it is the Murray et al. central post 72 which provides medial-lateral stability. Hence, Claim 57 recites structure not to be found in Murray et al. and Applicants' recited structure performs function incapable of being performed by the Murray et al. structure. Similarly, Claims 55 and 58 also define non-obvious subject matter over Murray et al. and it is submitted that Claims 54, 55 and 58 are allowable under 35 USC 103 over Murray et al.

Par. 14-7: Applicants respectfully traverse the objection of Claim 56 under 35 USC 103 as being unpatentable over Murray et al. Particularly, Applicants submit that it would not be obvious to one of ordinary skill in the art to provide the structure having the recited functions present in Claim 56 vis-a-vis the teachings of Murray et al. In the specific embodiment, Applicants provide the above-noted track and projection to provide the medial-lateral stability claimed which is substantially unaffected by the axial rotation and/or anterior-posterior shift of the bearing insert means during joint articulation, and, this structure and result are claimed broadly in Claim 56. To the contrary, it is prior art such as disclosed in Murray et al., and Goodfellow et al., over which Applicants' structure provides improved stability. As set forth in the attached APPENDIX,

it will be noted that, unlike Applicants' claimed structure, the mushroom projection 25 and undercut recess 34 in FIG. 3 of Goodfellow et al., and the cylindrical post 72 and oversized opening 84 formed in the meniscal plate 30 of Murray et al., do provide medial-lateral stability but such stability, as shown in the attached APPENDIX, is affected by anterior-posterior shift of the intermediate bearing insert. As may be seen in the attached APPENDIX, FIG. 1 titled Effective Anterior Shift on Medial-Lateral Stability, the position of the meniscal plate relative to the tibial component affects medial-lateral stability by virtue of its effect on the medial-lateral motion of the meniscal plate relative to the tibial component. FIG. 1a which shows a central positioning of the meniscal plate on the tibial component. It may be seen that the difference in diameters between the posts and the hole will allow a medial-lateral motion of the meniscal plate relative to the tibial component in an amount equal to the difference in diameter between the post and the hole. As may be seen in FIG. 1b, if the meniscal plate is moved anteriorly relative to the tibial component at the extreme of this motion the post will touch the edge of the hole and at this position no medial-lateral motion can occur in its immediate positions of anterior shift, of course there will be an intermediate amount of medial-lateral motion allowed with the greatest amount of motion being allowed when the meniscal plate is located centrally relative to the tibial component and no unilateral motion at the point where the post touches the hole after the anterior shift of the meniscal plate. Applicants submit that one of ordinary skill in the art could not modify the structure of Murray et al. to prevent Applicants' claimed structure and result, and hence, it is submitted that Claim 56

defines non-obvious subject matter under 35 USC 103 over Murray et al.


Par. 15: Non-elected Claims 14-16 and 33-35, the subject matter of a co-pending divisional application Serial No. 162,070, filed June 23, 1980, have been cancelled. Claims 41 and 38 have been amended as noted above to overcome the rejection under 35 USC 112 and, as also noted above, Claim 56 has been amended to include the recitations of dependent Claim 57.

In view of the foregoing claim amendments and distinguishing remarks, reconsideration of this application as amended under 37 CFR 1.116 and allowance of this application are respectfully solicited.

Respectfully submitted,

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